

REMARKS

Claims 1-5, 7, 8, 10-17 are rejected under 35 USC §103. The applicants respectfully traverse these rejections and request reconsideration of the application in view of the above amendments and the following remarks.

Claims 1 and 5 have been amended. These changes do not constitute new matter since this clarification of the claims is supported by the original disclosure.

REJECTIONS UNDER 35 USC §103

Claims 1-5 and 7, 8 and 10-12, 14-17 were rejected under 35 USC 103(a) as being obvious over Chu and Claim 13 was rejected under 35 USC 103(a) as being obvious over Chu and admitted prior art. Specifically, the Office Action suggests that Chu discloses a process of aromatization of a paraffin, such as ethane and propane, to benzene, toluene, C8 aromatics, methane and ethane in the presence of a catalyst containing a ZSM-5 zeolite, the aluminum of which is substituted with gallium, a metal such as platinum, and a binder such as alumina and silica.

The Office Action states that the language of Claim 1 does not exclude gallium from the zeolite structure of the catalyst. Claim 1 clearly states that the "catalyst consists essentially of platinum deposited on an aluminosilicate MFI zeolite". In a conversation with the examiner, he stated that his interpretation of the term "aluminosilicate" is that it does not exclude gallium. The applicants do not agree with this interpretation of the claim language. However, to facilitate prosecution of this patent application the applicants request that the claim language be revised to read " wherein the catalyst consists essentially of platinum deposited on an MFI zeolite consisting

of aluminum and silicon in the framework". Support for this language is found on page 6, lines 13-14 and 17. This change in language has been made to Claim 1 to clarify the claimed subject matter without intending to narrow the scope of the claims.

Every limitation in the claims must be given effect rather than considering one in isolation from the others [In re Geerdes, 491 F2d 1260, 180 USPQ 789(CCPA 1974)]. The patentable difference of the present invention over the reference is that the catalyst of the claimed invention consists essentially of which platinum has been deposited on a MFI zeolite consisting of aluminum and silicon in the framework. The zeolite does not contain gallium in the zeolite framework.

Chu also discloses an added metal which may be deposited on the surface of the zeolite by conventional ion-exchange or impregnation techniques (col. 3, lines 45-49). The added metal may be Groups I through VIII of the Periodic Table, examples of which are zinc, platinum, rhenium, cobalt, titanium, tellurium, sodium, nickel, boron, chromium, vanadium, copper, palladium, calcium, and rare earth metals (col. 3, lines 49-54, and col. 5, lines 15-20). The examiner states that it would have been obvious to one having ordinary skill in the art to modify the Chu process to select platinum. However, MPEP §2142 requires some suggestion or motivation to modify the reference. There is no suggestion or motivation in Chu to choose platinum over the other metals.

The examiner states that it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Chu process to select platinum from the other metals since it is expected that using any metal from the list would yield similar results. The examiner further discounts the unexpected results of the claimed invention shown in the Specification on pages 10-13, Example 1, Comparative Examples 1-5 and Table 1, for platinum

(Example 1), rhenium (Comparative Example 1), gold (Comparative Example 2), ruthenium (Comparative Example 3), zinc (Comparative Example 4) and iron (Comparative Example 5) deposited on ZSM-5 used in a process to aromatize propane to aromatics. These data were included in the patent application without regard to aromatic yield to show that Pt/ZSM-5 produces a fuel gas with more ethane than methane (C_2 v. C_1) compared to other metals but the examiner believes that this data shows that the catalyst containing platinum would produce less desired aromatic product than the catalysts containing other metals.

The applicants request that the examiner take into consideration the attached Affidavit under 37 CFR §1.132, in which different metals deposited on a zeolite were used in a process for aromatization of alkanes. One was a catalyst of the claimed invention, a ZSM-5 on which platinum had been deposited (Example 1). Others were catalysts on which zinc, rhenium or iron (Comparative Examples 1, 2 and 3, respectively) had been deposited. The results shown in the Affidavit for Example 1 and Comparative Examples 1, 2 and 3 demonstrate the improvements and unexpected results of the claimed invention and distinguish the claimed invention from the disclosure of Chu. In a process for aromatization of alkanes a catalyst of a ZSM-5 on which platinum had been deposited has better performance in propane conversion (71% v. 26%, 43% and 25%) and in aromatic yield, specifically benzene, toluene and xylene (19% v. 10%, 10% and 5%), than that for catalysts on which other metals have been deposited. In addition, the ethane/methane weight ratio of the fuel gas byproduct was higher for the catalyst containing platinum than those for the catalysts containing other metals (14.1 v. 1.0, 35 and 1.3).

The examiner further states that the claimed process is not for aromatization of propane with a ZSM-5 catalyst as is the process exemplified in the examples. The claimed process is for aromatization of an alkane having one to four carbon atoms per molecule with a catalyst consisting essentially of platinum deposited on an MFI zeolite consisting of aluminum and silicon in the framework. While the claimed process is demonstrated in the Examples with aromatization of propane with a Pt/ZSM-5 catalyst, the claimed process need not be limited to the embodiments in the examples.

[A]lthough the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments. *See, e.g., Nazomi Communications, Inc. v. ARM Holdings, PLC*, 403 F.3d 1364, 1369 [74 USPQ2d 1458] (Fed. Cir. 2005) (claims may embrace “different subject matter than is illustrated in the specific embodiments in the specification”); *Liebel-Flarsheim*, 358 F.3d at 906-08; *Teleflex*, 299 F.3d at 1327; *SRI Int’l v. Matsushita Elec. Corp. of Am.*, 775 F.2d 1107, 1121 [227 USPQ 577] (Fed. Cir. 1985). In particular, we have expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment. *Gemstar-TV Guide*, 383 F.3d at 1366.

Phillips v. AWH Corp., 75 USPQ2d 1321, 1334 (CAFC 2005)

The examiner appears to be arguing that the claims are not commensurate in scope with the examples. The applicants have a reasonable technical basis for believing that their invention is

applicable to zeolite catalysts other than ZSM-5 and to alkanes other than propane. There is a certain amount of predictability in chemistry, even catalysis. There has been no evidence advanced by the examiner to support the contention that catalysts and alkanes within the scope of the claims would not produce comparable results to those shown by the data. The ultimate legal conclusion of obviousness must be based on facts of record, not on an unsupported statement by the examiner. If the examiner is asserting that the claimed process is not commensurate in scope with the examples, such an assertion must be supported by evidence or reasoning substantiating the doubt so expressed. In re Dinh-Nguyen et al, 181 USPQ 46 (CCPA 1974); In re Bowen, 181 USPQ 58, (CCPA 1974).

Testing a portion of a claimed class is sufficient since the applicant need not demonstrate superior results in every environment in which the claimed invention is used. In re Chupp, 816 F2d 643; 2 USPQ2d 1437 (CAFC 1987). The court also noted in Chupp that though the rejection was couched in the language of obviousness, it was actually one based on "undue breadth". As in Chupp, the examiner in the present case has attempted to resurrect the discredited "undue breadth" rejection by camouflaging it as an obviousness rejection.

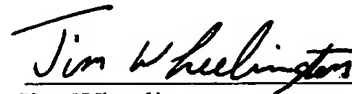
The applicants note that the examples of the cited reference used a catalyst of a ZSM-5 zeolite and a feed of n-hexane (Examples 1-3, col. 10, line 7, through col. 11, line 50), yet Claim 1 of Chu is for a "catalyst comprising a crystalline zeolite" and a "feed containing at least 50 weight percent of C₃ to C₁₂ aliphatic hydrocarbons". The United States Patent and Trademark Office has issued patents with claims broader than the examples of the disclosure and should be consistent in its actions.

Claim 5 has been amended and now reads in part "wherein the catalyst is Pt/ZSM-5 and the alkane is propane. Support for this language is found in Example 1, page 10, lines 10-24, and on page 12, lines 19-23.

A Petition and Fee for Extension of Time under 37 CFR §1.136(a) is being filed concurrently with this paper. The Commissioner is hereby authorized to charge the fee of \$450.00 under 37 CFR §1.17(a)(2) and any additional fees due by filing this paper or to credit any overpayment to Account No. 502025.

On the basis of the above amendments and remarks, reconsideration of this application is requested and its allowance of the claims is requested at the examiner's earliest convenience. No new matter has been added.

Respectfully submitted,



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